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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,614	03/09/2004	Shyam Kapur	017887-011800US	4081

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EXAMINER

RADTKE, MARK A

ART UNIT	PAPER NUMBER
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2165

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,614

Applicant(s)

KAPUR ET AL.

Examiner

Mark A. X Radtke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 and 27-46 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20040920.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 46 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "about" in line 2 of claim 46 is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-13, 16-25, 27-36 and 38-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Modha (U.S. Pat. No. 6,684,205).

As to claim 1, Modha teaches a computer-implemented method for generating superunits from a concept network, the concept network including a plurality of units and a plurality of relationships defined between pairs of the plurality of units, wherein each relationship has an associated edge weight (see Abstract and columns 1-2, "Summary of the Invention", where "superunits" is read on "clusters", "concept network" is read on "database containing hypertext documents", "units" is read on "hypertext documents" and "relationship" is read on "link dictionary"), the method comprising the acts of:

identifying a superunit seed comprising at least one member unit, wherein each member unit is one of the plurality of units of the concept network (see column 1, line 60);

defining a signature for the superunit seed, the signature including one or more signature units, wherein each signature unit has a relationship in the concept network with at least a minimum number of the member units (see column 1, lines 61-62 and see column 7, lines 3-41, where "signature" is read on "concept triplet" and "signature units" is read on " (D_j^*, F_j^*, B_j^*) ");

expanding the superunit seed by adding one or more new member units from the concept network, wherein each new member unit satisfies a match criterion based on

the signature (see column 1, lines 63-67, where "match criterion" is read on "closest to [...] the given vector triplet");

modifying the signature based on the expanded superunit seed;

repeating the acts of expanding and modifying until a convergence criterion is satisfied, wherein a final superunit and a final signature are formed once the convergence criterion is satisfied; and

storing superunit membership information for each member unit of the final superunit (see column 2, lines 1-5).

As to claim 2, Modha teaches wherein the concept network is generated from a set of previous search queries (see column 10, lines 50-59).

As to claims 3 and 31, Modha teaches wherein the act of storing the superunit membership information includes the acts of:

computing a membership weight for each member unit of the final superunit, wherein the membership weight is based on the relationships in the concept network between the member unit and the signature units of the final signature,

wherein the stored superunit membership information includes the membership weight (see column 7, lines 36-64).

As to claim 4, Modha teaches further comprising the act of generating the concept network from the previous queries (see column 10, lines 20-44).

As to claim 5, Modha teaches further comprising the acts of:
subsequently to the act of modifying the signature and prior to the step of repeating, purging the superunit seed by removing a member unit that does not satisfy the match criterion based on the modified signature,
wherein the act of purging is repeated subsequently to repeating the step of modifying (see column 8, lines 30-43).

As to claims 6 and 32, Modha teaches wherein the convergence criterion is satisfied if, as a result of the act of repeating, membership of the superunit seed changes by no more than a maximum number of units (see column 8, lines 51-57).

As to claims 7 and 33, Modha teaches wherein the convergence criterion is satisfied if, as a result of the act of repeating, membership of the signature changes by no more than a maximum number of units (see column 8, lines 51-57).

As to claims 8 and 34, Modha teaches wherein the act of identifying the superunit seed includes the act of forming a cluster of two or more units as the superunit seed, wherein each unit in the cluster has at least one neighbor unit in common with a base unit of the cluster (see column 7, lines 36-38 and see column 3, lines 24-26).

As to claims 9, 35 and 43, Modha teaches wherein the act of forming the cluster includes the acts of:

- selecting a base unit and a candidate unit from the concept network;
- identifying a plurality of neighbor units of the base unit, wherein each neighbor unit has a relationship in the concept network to the base unit;
- identifying at least one of the neighbor units as a matched unit, wherein each matched unit has a relationship in the concept network to the candidate unit;
- computing a clustering weight for the candidate unit based on the plurality of neighbor units including the at least one matched unit; and
- based on the clustering weight, determining whether to include the candidate unit in a cluster with the base unit (see figure 8 and see column 10, line 45, "Choice of the Weights").

As to claim 10, Modha teaches wherein the act of identifying the superunit seed includes forming a clique of two or more closely related units (see Examiner's comments regarding claim 9 and see figure 8).

As to claims 11 and 36, Modha teaches wherein the act of identifying the superunit seed includes the act of receiving a list of units from an external source, the list of units being usable as a superunit seed (see column 4, lines 8-11).

As to claim 12, Modha teaches wherein the external source comprises a web page (see column 4, lines 8-11).

As to claim 13, Modha teaches wherein the act of identifying the superunit seed further includes the act of pruning the list of units to remove a unit that is not in the concept network (see column 4, lines 12-16).

As to claims 16 and 38, Modha teaches wherein the act of identifying the superunit seed includes the acts of:

detecting occurrences of units of the concept network in a source document; and
generating a superunit seed based on the detected occurrences (see columns 2-3, spanning paragraph, "out-links").

As to claim 17, Modha teaches wherein the relationships between the units of the concept network include one or more of an association relationship, an extension relationship, and an alternative relationship (see columns 2-3, spanning paragraph).

As to claim 18, Modha teaches wherein the act of defining the signature includes the acts of:

identifying as the signature units a plurality of units in the concept network that have a specified relationship with at least a minimum number of the member units of the associated superunit seed; and

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establishing a threshold number (see column 4, line 50 – column 5, line 4),

wherein the step of expanding the superunit seed includes:

selecting a candidate unit from the concept network; and

adding the candidate unit to the superunit seed in the event that the

candidate unit has the specified relationship with at least the threshold number of the signature units (see column 5, lines 5-13).

As to claim 19, Modha teaches wherein the threshold number is established relative to a total number of signature units by reference to a predetermined fraction (see column 5, lines 34-37).

As to claim 20, Modha teaches wherein defining the signature includes the acts of:

identifying as the signature units a plurality of units in the concept network that have a specified relationship with at least a minimum number of the member units of the associated superunit seed;

establishing an edge weight range for each signature unit; and

establishing a threshold number (see column 5 and see column 8, lines 30-44),

wherein the step of expanding the superunit seed includes:

selecting a candidate unit from the concept network;

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determining a first number equal to a number of the signature units with which the candidate unit has the specified relationship and has an edge weight within the edge weight range for that signature unit; and

adding the candidate unit to the superunit seed in the event that the first number is equal to or greater than the threshold number (see column 12, step 2).

As to claims 21, 39 and 41, Modha teaches further comprising, subsequently to the act of storing, the acts of:

receiving a current query;

parsing the current query into one or more constituent units;

retrieving the stored superunit membership information for one or more of the constituent units; and

formulating a response to the current query based at least in part on the retrieved superunit membership information (see column 5, line 56 – column 6, line 6).

As to claim 22, Modha teaches wherein the act of formulating the response includes the act of using the superunit membership information to suggest a related search query (see figure 4 and see column 9, lines 35-40, "Keywords").

As to claim 23, Modha teaches wherein the related search query includes a first unit that is one of the member units of the superunit, wherein the first unit is not a constituent unit of the current query (see column 9, lines 46-50, "References").

As to claim 24, Modha teaches wherein the related search query includes a first unit that is one of the signature units of the superunit, wherein the first unit is not a constituent unit of the current query (see column 9, lines 20-24, "Summary").

As to claim 25, Modha teaches wherein the act of formulating the response includes the act of using the superunit membership information to suggest a web site for a sideways search (see column 9, line 66 – column 10, line 19).

As to claim 27, Modha teaches wherein wherein the act of formulating the response includes the act of using the superunit information to resolve an ambiguity of a first one of the constituent units based on comparing another of the constituent units to signature units for one or more superunits of which the first constituent unit is a member (see figure 8 and see column 13, lines 38-48).

As to claim 28, Modha teaches wherein the act of formulating the response includes the act of using the superunit information to select sponsored content to be displayed (see figure 4, "McAfee.com").

As to claim 29, Modha teaches a system for generating superunits from user search queries, the system comprising (see Abstract):

For the remaining steps of this claim applicant(s) is/are directed to the remarks and discussions made in claim 1 above.

As to claim 30, Modha teaches wherein the superunit builder module is further configured to define a signature for each superunit seed, to expand the superunit seed by adding one or more new member units from the concept network, wherein each new member unit satisfies a match criterion based on the signature, to modify the signature based on the expanded superunit seed, and to repeat the steps of expanding and modifying until a convergence criterion is satisfied, wherein a final superunit and a final signature are formed once the convergence criterion is satisfied (see Examiner's comments regarding claim 1).

As to claim 40, Modha teaches a computer program product comprising a computer readable medium encoded with program code (see Abstract), the program code including:

For the remaining steps of this claim applicant(s) is/are directed to the remarks and discussions made in claim 1 above.

As to claim 42, Modha teaches a computer-implemented method for forming a cluster from a concept network, the concept network including a plurality of units and a plurality of relationships defined between the units, wherein each relationship has a

associated edge weight (see Abstract and Examiner's comments regarding claim 1), the method comprising the acts of:

For the remaining steps of this claim applicant(s) is/are directed to the remarks and discussions made in claim 1 above.

As to claim 44, Modha teaches a computer-implemented method for forming a clique from a concept network, the concept network including a plurality of units and a plurality of relationships defined between the units, wherein each relationship has an associated edge weight (see Abstract and Examiner's comments regarding claim 1), the method comprising the acts of:

For the remaining steps of this claim applicant(s) is/are directed to the remarks and discussions made in claim 1 above.

As to claim 45, Modha teaches wherein the first threshold value and the second threshold value are each equal to 100% (see column 8, lines 55-57).

As to claim 46, Modha teaches wherein the first threshold value and the second threshold value are each equal to about 70% (See rejections under 35 U.S.C. 112, second paragraph and Examiner's comments regarding claim 45. 100% is "about" 70%.)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 14 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modha as applied to claims 1 and 34 above, and further in view of Silverstein ("Analysis of a very large AltaVista query log", CSRC Tech. Rep.).

As to claims 14 and 37, Modha does not explicitly teach wherein the act of identifying the superunit seed includes the acts of:

receiving user behavior data related to the previous queries; and
detecting similarities in the user behavior data related to previous queries
containing different units.

Silverstein teaches wherein the act of identifying the superunit seed includes the acts of:

receiving user behavior data related to the previous queries; and
detecting similarities in the user behavior data related to previous queries
containing different units (see Abstract).

Therefore, it would have been obvious to one of ordinary skill in the relevant art at the time the invention was made to have modified Modha by the teaching of Silverstein because "user studies have shown that the users rarely go beyond the top 20 documents returned by an information retrieval system" (Modha, column 10, lines

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36-39). Furthermore, Silverstein is explicitly incorporated by reference in the disclosure of Modha. See column 10, lines 39-43.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Modha as applied to claim 14 above, and further in view of Srivastava ("Web Usage Mining: Discovery and Applications of Usage Patterns from Web Data", SIGKDD Explorations, Jan. 2000).

As to claim 15, Modha, as modified, does not explicitly teach wherein the user behavior data includes click through information for the previous queries.

Srivastava teaches wherein the user behavior data includes click through information for the previous queries (see Abstract and section 1, "Introduction", paragraph 1).

Therefore, it would have been obvious to one having ordinary skill in the relevant art at the time the invention was made to have further modified Modha by the teaching of Srivastava because a "set of server sessions is the necessary input for any Web Usage analysis or data mining tool" (see Srivastava page 14, left column, lines 13-15).

Allowable Subject Matter

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8. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Additional References

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of art with respect to document clustering in general:

<u>Doc. No.</u>	<u>Assigned to</u>
US 20030182310 A1	Charnock, Elizabeth et al.
US 7085771 B2	Chung; Christina Yip et al.
US 5754938 A	Herz; Frederick S. M. et al.
US 7031980 B2	Logan; Beth T. et al.

"Clustering hypertext with applications to web searching"

"Cluster analysis for hypertext systems"

"Automatic topic identification using webpage clustering"

"HyPursuit: a hierarchical network search engine that exploits content-link hypertext clustering"

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Conclusion

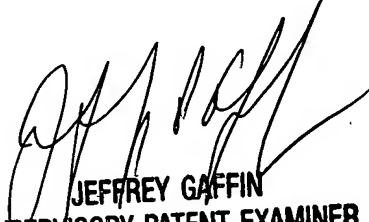
10. Any inquiry concerning this communication or earlier communications should be directed to the examiner, Mark A. Radtke. The examiner's telephone number is (571) 272-7163, and the examiner can normally be reached between 9 AM and 5 PM, Monday through Friday.

If attempts to contact the examiner are unsuccessful, the examiner's supervisor, Jeffrey Gaffin, can be reached at (571) 272-4146.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Customer Service at (800) 786-9199.

maxr

29 November 2006


JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
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